



DOE-EM/GJ1160-2006

## 299-W15-85 (A7385) Log Data Report

### Borehole Information:

<b>Borehole:</b> 299-W15-85 (A7385)		<b>Site:</b> 216-Z-9 Crib			
<b>Coordinates (WA St Plane)</b>		<b>GWL<sup>1</sup> (ft):</b> None		<b>GWL Date:</b> 02/06/06	
<b>North (m)</b> 135643.711	<b>East (m)</b> 566757.45	<b>Drill Date</b> 10/54	<b>Elevation (TOC)</b> 667.45	<b>Total Depth (ft)</b> 101	<b>Type</b> Cable

### Casing Information:

<b>Casing Type</b>	<b>Stickup (ft)</b>	<b>Outer Diameter (in.)</b>	<b>Inside Diameter (in.)</b>	<b>Thickness (in.)</b>	<b>Top (ft)</b>	<b>Bottom (ft)</b>
Welded steel	1.7	8 5/8	8	5/16	1.7	135

### Borehole Notes:

Outside casing diameter and stickup measurements for the 8-in. casing were acquired using a caliper and steel tape. Measurements are rounded to the nearest 1/16 inch. Logging data acquisition is referenced to the top of casing (TOC).

### Spectral Gamma Logging System (SGLS) Equipment Information:

<b>Logging System:</b> Gamma 4N		<b>Type:</b> SGLS (60%) SN: 45TP22010A	
<b>Effective Calibration Date:</b> 08/16/05		<b>Calibration Reference:</b> DOE/EM-GJ953-2005	
		<b>Logging Procedure:</b> GJO-HGLP 1.6.5, Rev. 1	

### Neutron Moisture Logging System (NMLS)

<b>Logging System:</b> Gamma 4F		<b>Type:</b> NMLS SN: H380932510	
<b>Effective Calibration Date:</b> 10/14/05		<b>Calibration Reference:</b> DOE/EM-GJ1020-2005	
		<b>Logging Procedure:</b> GJO-HGLP 1.6.5, Rev. 1	

### SGLS Log Run Information:

<b>Log Run</b>	<b>1</b>	<b>2 Repeat</b>			
Date	02/06/06	02/06/06			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	100.5	48.5			
Finish Depth (ft)	2.5	38.5			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			

Log Run	1	2 Repeat			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A <sup>2</sup>	N/A			
Pre-Verification	DN231CAB	DN231CAB			
Start File	DN231000	DN231099			
Finish File	DN231098	DN231109			
Post-Verification	DN231CAA	DN231CAA			
Depth Return Error (in.)	- 1	0			
Comments	No fine-gain adjustment	No fine-gain adjustment			

### **NMLS Log Run Information:**

Log Run	1	2 Repeat			
Date	02/07/06	02/07/06			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	100.5	48.5			
Finish Depth (ft)	1.75	37.75			
Count Time (sec)	N/A	N/A			
Live/Real	R	R			
Shield (Y/N)	N	N			
Sample Interval (ft)	0.25	0.25			
ft/min	1.0	1.0			
Pre-Verification	DF122CAB	DF122CAB			
Start File	DF122000	DF122396			
Finish File	DF122395	DF122439			
Post-Verification	DF122CAA	DF122CAA			
Depth Return Error (in.)	- 1	0			
Comments	None	None			

### **Logging Operation Notes:**

Logging was conducted with a centralizer on the sondes. Measurements are referenced to the TOC. Repeat sections were collected in this borehole to evaluate the logging systems' performance.

### **Analysis Notes:**

<b>Analyst:</b>	Henwood	<b>Date:</b>	03/28/06	<b>Reference:</b>	GJO-HGLP 1.6.3, Rev. 0
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Pre-run and post-run verifications for the logging systems were performed before and after each day's data acquisition. Acceptance criteria were met.

SGLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated using the EXCEL worksheet template identified as G4NAug05.xls. A casing correction for 0.322-in.-thick casing was applied to the SGLS data. No corrections for dead time or water were required. NMLS moisture content was calculated for an 8-in. inside-diameter casing.

### **Results and Interpretations:**

No man-made radionuclides were detected in this borehole.

The moisture log indicates considerable variability with a maximum volume percent moisture of approximately 15 percent.

The repeat sections for the SGLS and NMLS indicate good agreement for the naturally occurring radionuclides and moisture content, respectively.

Log data were acquired in this borehole in 1998 by Waste Management Federal Services NW using the Radionuclide Logging System (RLS). No contamination was detected, which is consistent with the current log data.

**List of Plots:**

Man-Made Radionuclides  
Natural Gamma Logs  
Combination Plot  
Total Gamma & Moisture  
Total Gamma & Dead Time  
Repeat Section of Natural Gamma Logs  
Repeat Section for NMLS

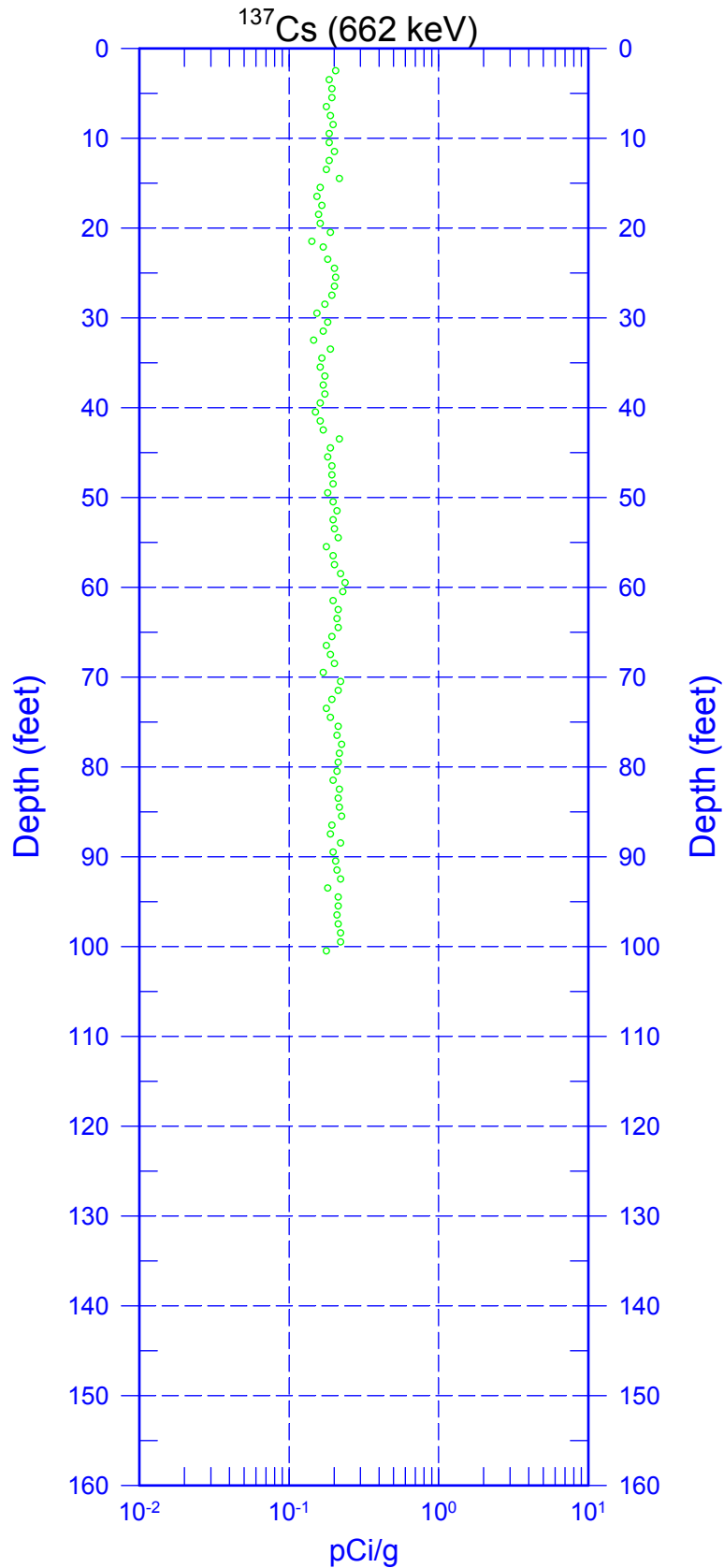
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<sup>1</sup> GWL – groundwater level

<sup>2</sup> N/A – not applicable

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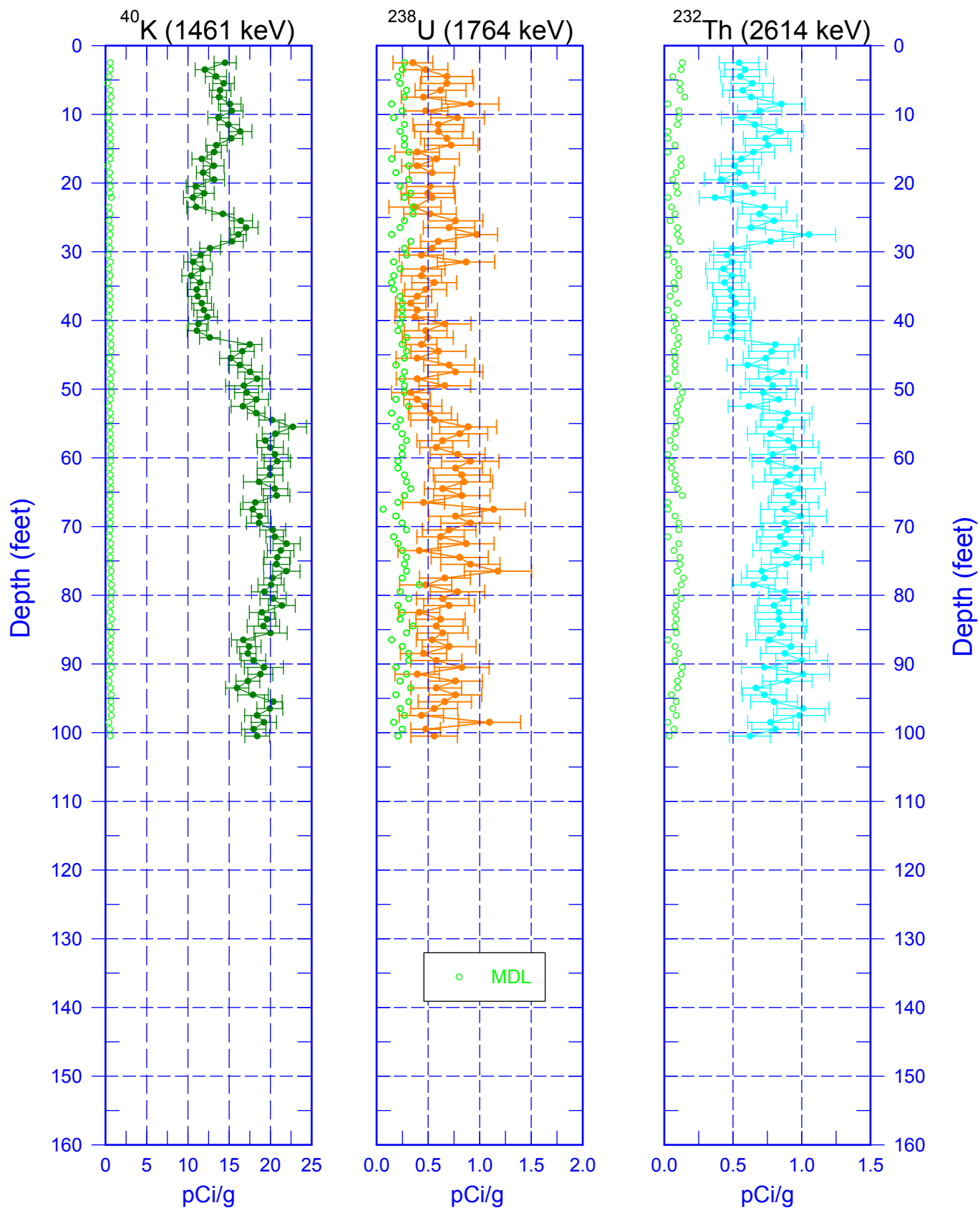
## Man-Made Radionuclides



Zero Reference = Top of Casing

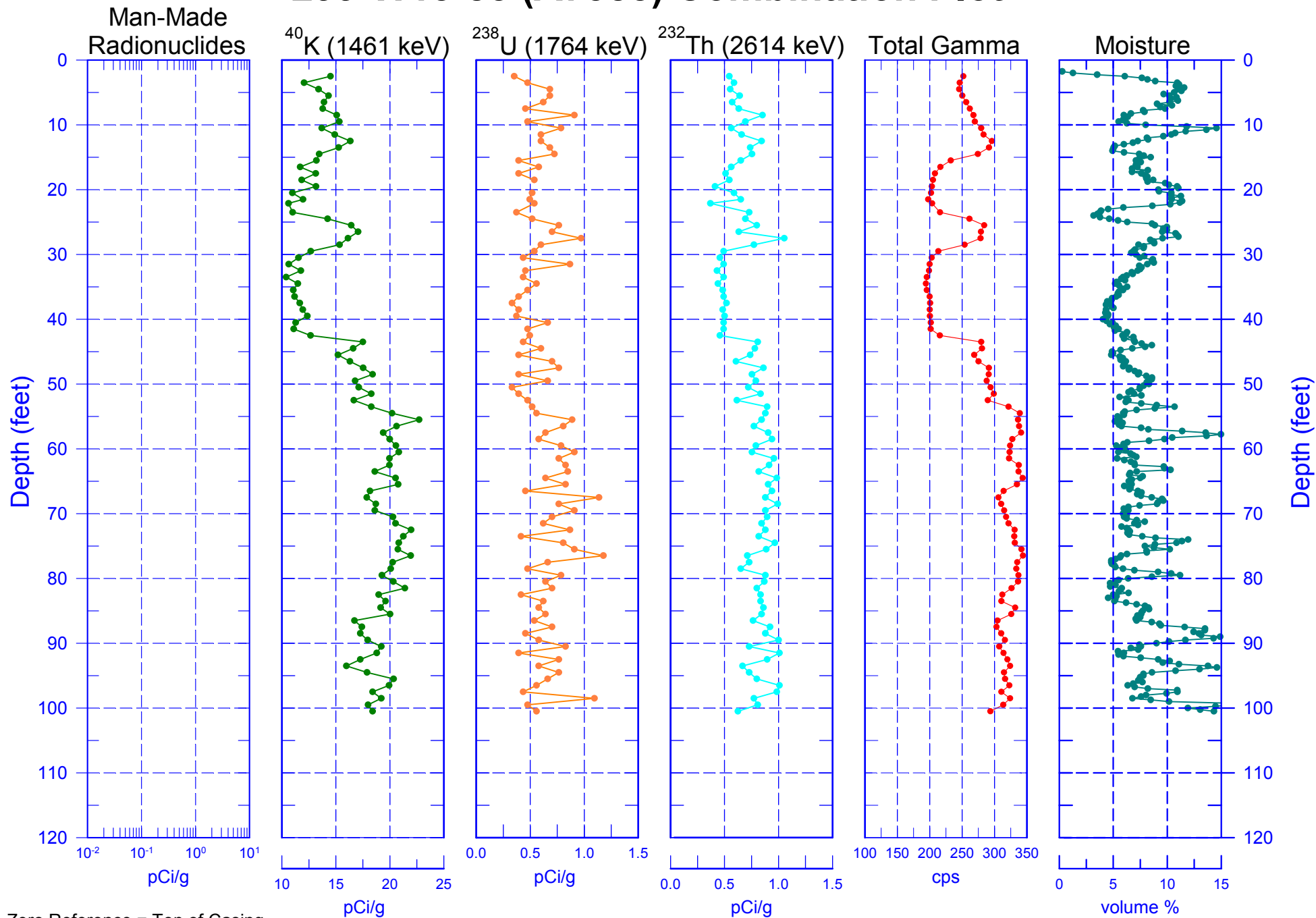
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## Natural Gamma Logs



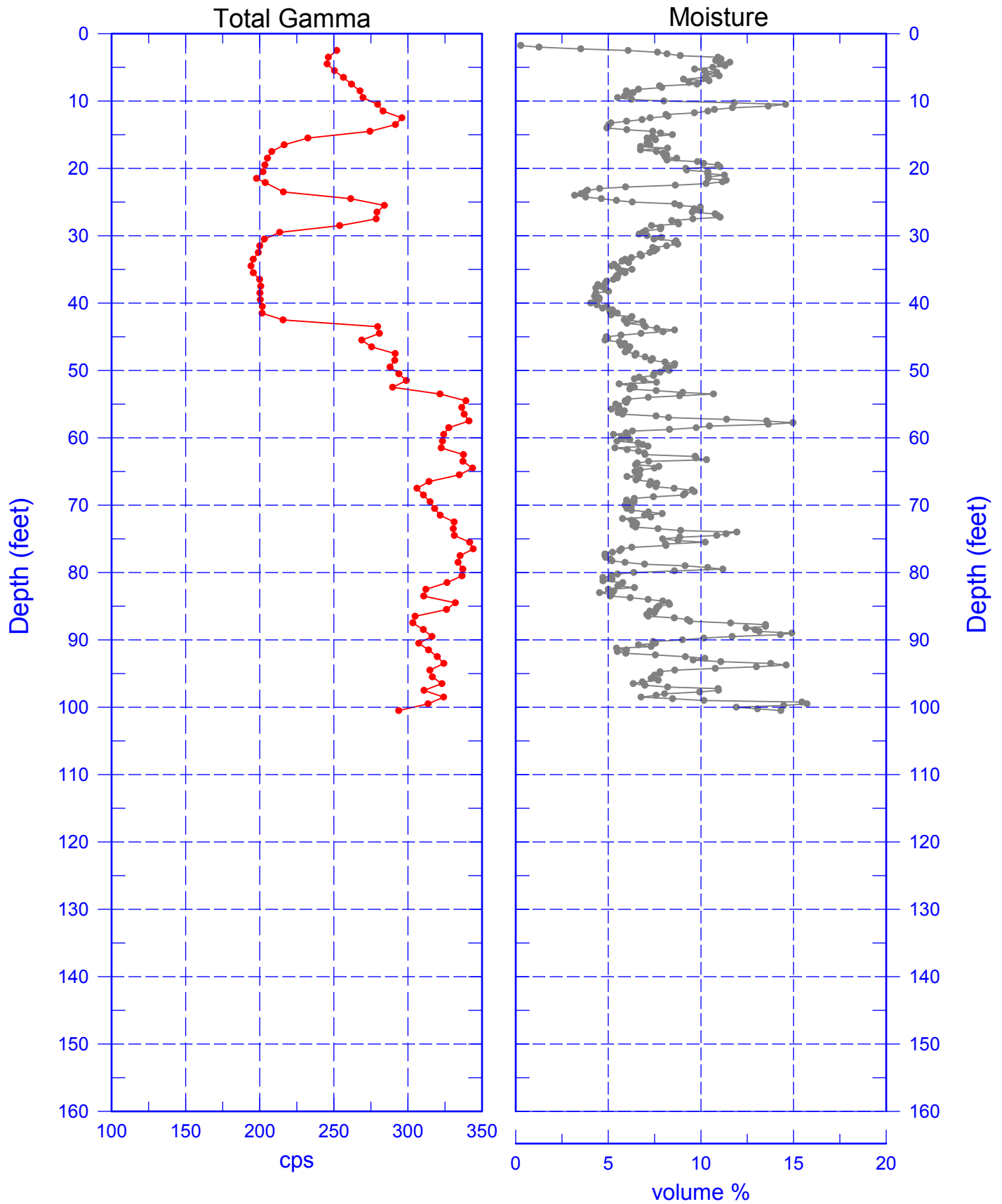
Zero Reference = Top of Casing

# 299-W15-85 (A7385) Combination Plot



# 299-W15-85 (A7385)

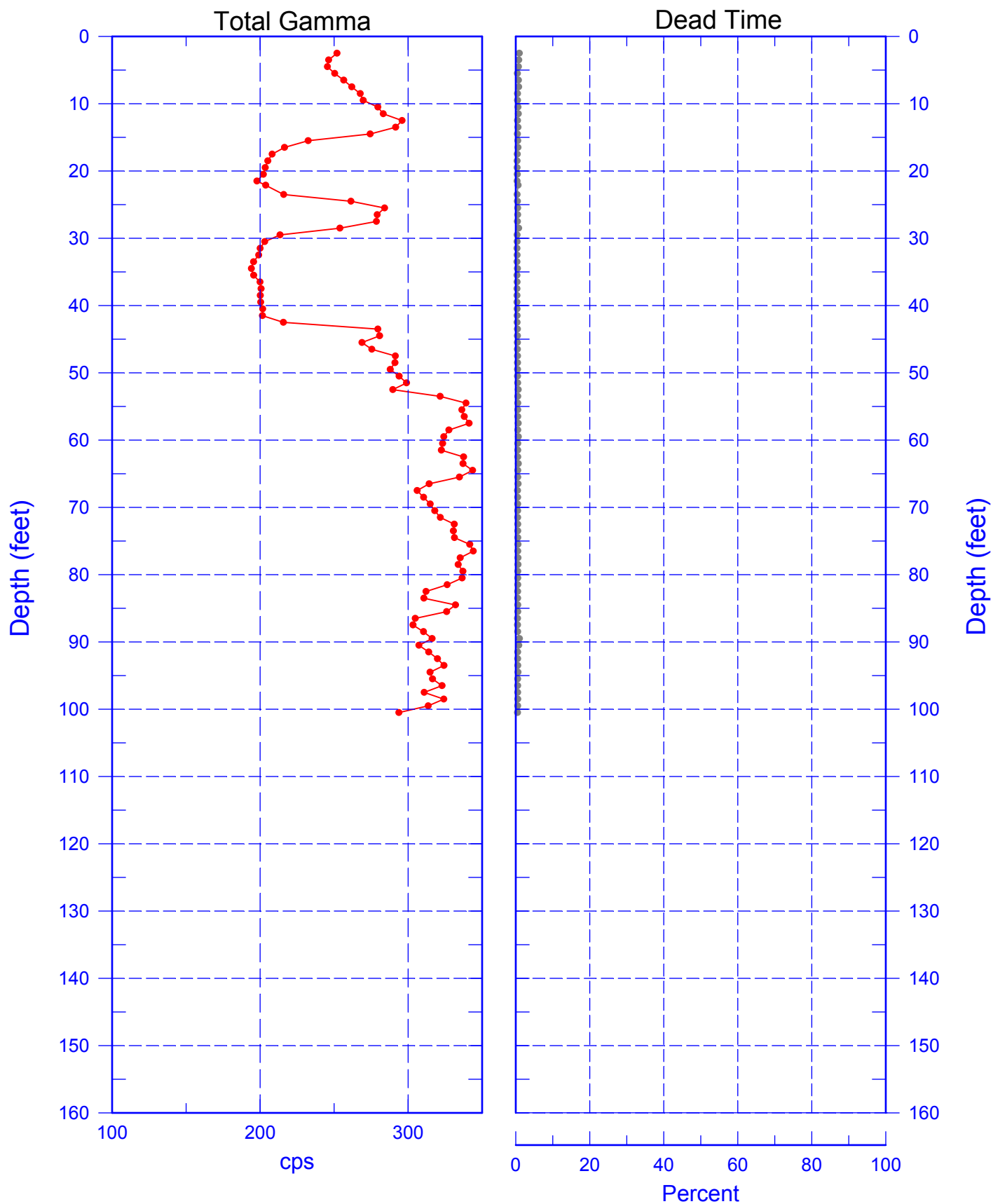
## Total Gamma & Moisture



Zero Reference = Top of Casing

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## Total Gamma & Dead Time

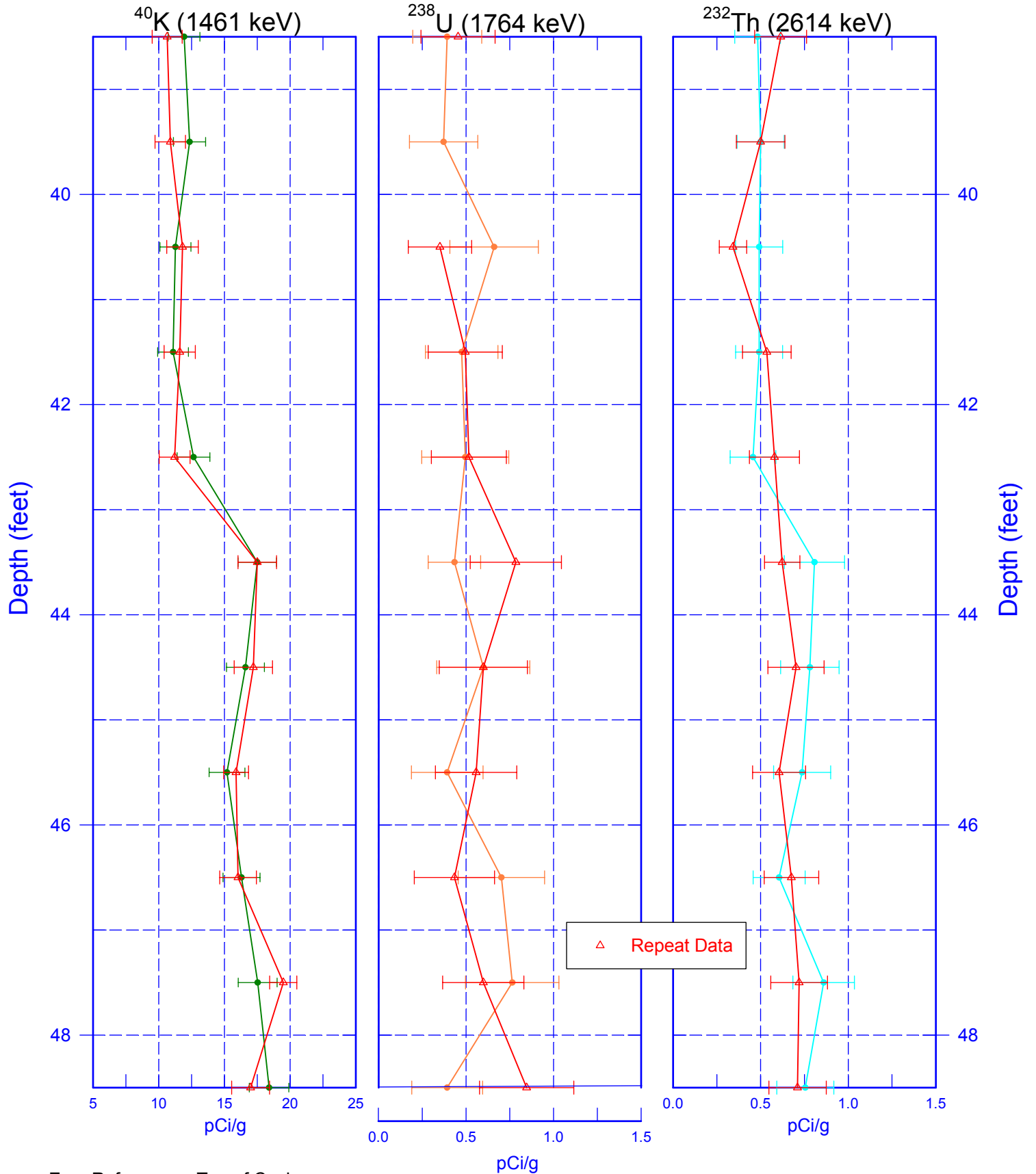


Zero Reference = Top of Casing



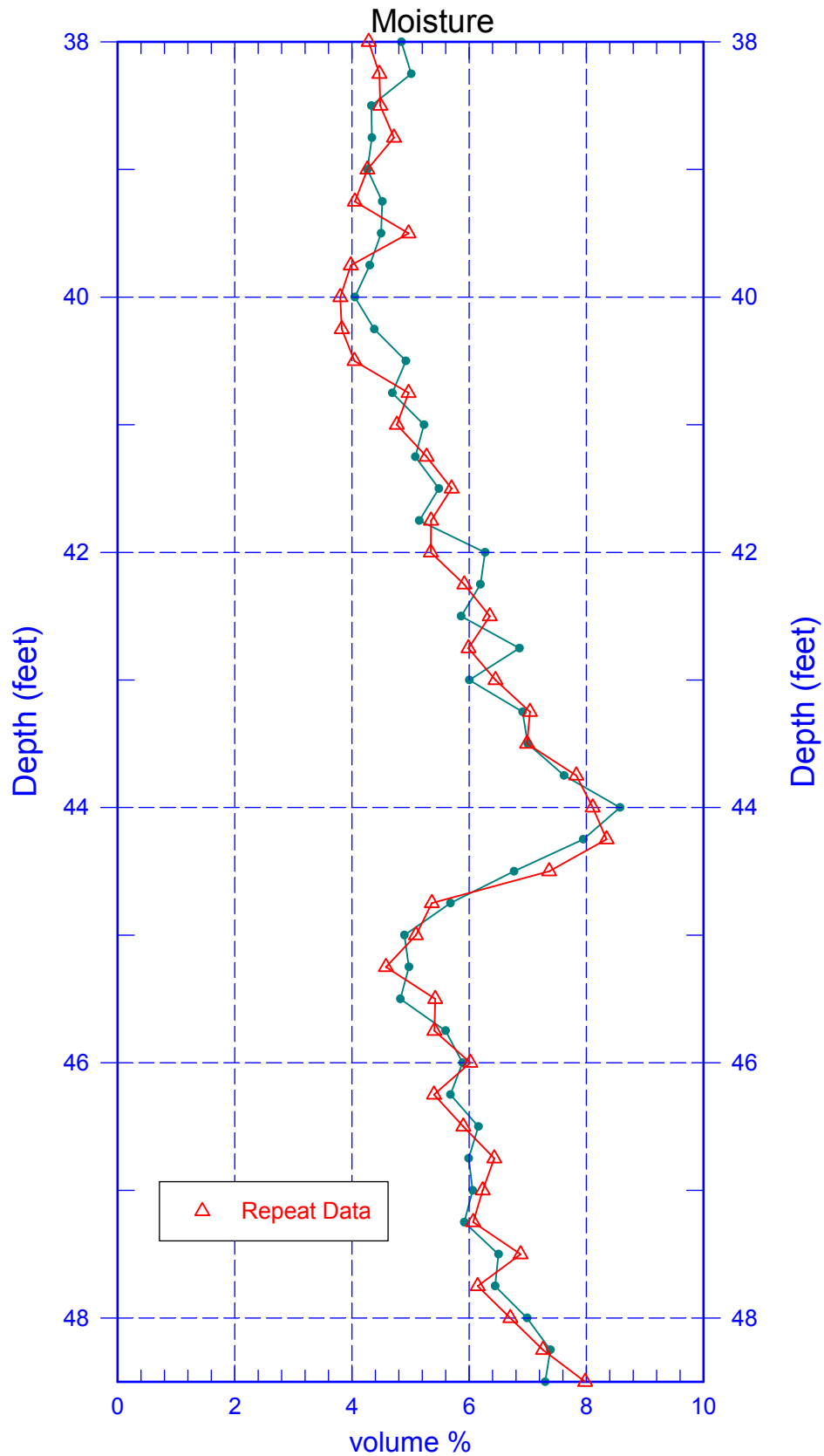
# 299-W15-85 (A7385)

## Repeat Section of Natural Gamma Logs



# 299-W15-85 (A7385)

## Repeat Section for NMLS



Zero Reference = Top of Casing